248 433 According to Communist reports, some of the factors responsible for the rapid increase in cotton acreage and production were the fixing of a favorable parity price between cotton and grain and the improvement of per-unit yield. The increase and decrease in the adjustments of the parity price corresponded to the higher or lower cotton acreage. The prices which were quoted for grains of different regions are shown in the following tabulation.

248 243 435

Table 13 The Ratio of Cotton Price to Price of Grains */

(In weight-units of grain to one unit of cotton lint, 7/8" grade)

Region	1950	1951	1952	1953	1954	1955
Wheat	7.0	8.0	7.5-8.5	6.25-7.5	6.75-8.00	Same
Millet	8.0	8.5	8.0-9.5	6.75-8.0	7.50-8.25	as
Rice	6.5	8.5	8.0-9.0	6.75-8.0	7.25-8.25	1954

*/ Tu-pao Shou-ts'e [Newspaper Reading Handbook], Hankow, Chang-chiang Jih-pao, [Yangtze Daily Co.], 1950, p. 574; Ching-chi Chou-pao [Economic Weekly], Shanghai, May 28, 1953, N0. 28, p. 21; NCNA, March 3, 1954.

248 Among the East China provinces,
243 Shantung and parts of Anhwei and Kiangsu belong
435 to the wheat region, while a large part of Kiangsu, Anhwei, Chekiang and Fukien belong to the rice region. In 1953 the parity prices were lowered and the acreage and the production also decreased.

248 An upward trend in the average cotton
433 yield per unit of land was noticed during 1949-53, except for a slight fluctuation in 1953, 11.6 per cent below the figure for 1952. This loss was the result of natural calamities in Shantung and Kiangsu provinces. The cotton yields of different provinces from 1949 to 1953 are shown in Table 14.

2: Murphy G-4 (no date) 1953 AF15 East China AF15

438 505 that for the most part beyond approximately 75 miles from Shanghai, the time-distance-transport costs make water shipment of rice uneconomic under present conditions. It is correspondingly a logical conclusion that the heavy dependence of Shanghai on this small local rice-supply area is implemented by the Venetian network of canals and natural waterways in the immediate hinterland of the [435] city. Discussions of rice production and marketing in the delta area state that rice moves to both local and distant markets almost entirely by junk or sampan, and that in hilly areas with little or no water transport (such as the country southeast of Nanking, or west and south of Hangchow) the local market price of rice is double the price in the delta lowlands.[16]

The crucial importance of water transport in the pre-industrial economy of China as a whole is heightened in the Yangtze delta area, where water routes are so highly developed. Shanghai lies at the focus of these routes, and of the level terrain of the delta over which transport by water can operate at optimum efficiency. This has been a vital factor in making possible the development of a city of four million people.

438 439 The Shanghai rice merchants divide their main supply areas into three categories: a. local rice (roughly from within a 75-mile radius); b. out-province rice (from Anhwei, Kiangsi, Chekiang, Kiangsu north of the Yangtze, and at scattered intervals from Hunan); c. foreign rice (from the Indo-Chinese peninsula, mainly ex-Saigon, but including small amounts from Bankok and Rangoon).*

435 439 The factors influencing the rice market in Shanghai and its general behavior through the year throw considerable light on how the city is fed. These factors (in addition to the amount and quality of the rice harvest in the main supply areas) may be summarized as follows:

1. The price of foreign and out-province rice. Average monthly prices for the three area categories of rice for the period 1920–1936 were approximately as follows: a. (local rice), CNC$12.00† per

* The export trade in rice from Indo-China, and to a lesser degree from Siam and Burma, is in the hands of overseas Chinese.

† Chinese National Currency — the Chinese dollar.

2: Murphy G-4 (no date) 1953 AF15 East China AF15

picul (the Shanghai rice picul during this period equalled 172 pounds); b. (out-province rice) CN $12.40 per picul; c. (foreign rice) CNC$12.30 per picul.[17] At these levels the composition of the rice supply tended to remain stable, with local rice accounting for over 80 per cent of the total. Shanghai in general prefers to eat local rice even when its price rises slightly above that of foreign rice, as usually happens during the local planting season and at certain other times (see below). Foreign rice is a different type from the local product and there is prejudice in Shanghai against its taste and cooking properties. Any great change in these relative prices, however, upsets the balance. When foreign rice is relatively cheap, its Shanghai sales are large, but as fresh supplies continue to be ordered by the merchant groups, the Saigon price rises and the normal price and supply situation is restored.

2. The planting season for rice in the delta area, which lasts from early May to early June. During this period, movements of rice to Shanghai from the delta virtually cease, and the city draws on rice it holds in storage, plus foreign imports. The fact that the planting season usually coincides with the wet period of the plum rains means that the Shanghai price of rice rises sharply from late May to mid-June. New supplies of local rice come into the Shanghai market in early July (i.e., from the previous year's crop, which has been stored in the local collecting centers but which is not moved to Shanghai during the planting season, the greatest peak labor period of the agricultural year). The Shanghai price regains its normal level as a rule before the end of the month.

3. The weather. Hot and/or humid weather tends to rot stored rice, and thus depresses the price by forcing sales, or stimulates it by jeopardizing what is stored. Drought seldom affects harvests seriously in the delta with its network of canals to supply irrigation water. The greatest effect of rain is on the day-to-day movement of rice from local production areas to the Shanghai market. The delta waterways are easily flooded over their banks by rain and wind, and by both in combination with the tide in the stretches which receive tidal inflow from the Yangtze or the Whangpoo.*

* This might be deduced from the discussion of the delta above in Chapter Three, and it is referred to specifically in the two journals cited for this account of the rice

132 The boatmen on these waterways usually refuse to load or unload
435 rice when it is raining (whether out of regard for their own safety
438 or for that of their cargo is not clear), and the flow of rice to Shang-
505 hai stops almost entirely whenever it rains. The Shanghai rice market, including foreign and out-province rice, reacts with great sensitivity to the rain situation in the city, price changes for rice from all sources often following changes in the weather as closely as an hour.* The role of the weather in the Shanghai rice market as a whole underscores the fact that local sources of rice hold the commanding position, and that the rice moves to the city largely by boat. The monthly reports on the rice market refer repeatedly to water transport connecting Shanghai with the rice-producing areas of south central Kiangsu, but very little mention is made of railway transport of rice during the entire period 1920–1936. Highway transport of rice is not mentioned at all. The dominance of water is so marked that these monthly reports lay great stress on the weather, and conclude in one case that "Rain and wind make a great difference to the rice merchant's heart."[18]

527 4. Traditional festivals, especially the Chinese New Year (a
435 lunar festival occurring as a rule in early February). Their effects
438 may be summarized as follows: a. since the New Year is the time for settling of accounts as well as for feasting, the farmers need cash and sell their rice; the price falls as a result at the beginning of the festival period; b. however, the holiday on the farms decreases the amount of rice collected and transported to inland centers as the festival continues, thus counterbalancing the earlier selling; c. banditry resulting from inability to pay debts slows or stops move-

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market on an average of ten or twelve times a year, principally from March through July.

* According to records kept by the Public Works Department of the International Settlement at Shanghai (printed each year in the Annual Reports of the Municipal Council from 1920 to 1939), rainy days occurred in the city from 1920 to 1939 on an average as follows:

	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*
Number of days on which some rain fell	3	4	6	6	8	14	7	5	5	4	4	1
Number of days with rain continuously 6 A.M.-6 P.M.	1	2	4	4	5	8	4	3	3	2	1	1

2: Murphy G-4 (no date) 1953 AF15 East China AF15

ment of rice by water to Shanghai. This last has the greatest effect on the rice market. In general, the Shanghai price of rice tends to rise at New Year about 5 per cent and at other festival times a little less. The above effects of festival periods also demonstrate the leading position of local rice supplies, since the entire Shanghai rice market (including the price of foreign rice imports) reacts at these times to purely local festival activities. Local rice being in short supply, foreign rice is at a premium.

5. Civil disturbances. Movement of local rice to Shanghai is notably interfered with during periods of local unrest, especially when troop movements occur. The boatmen fear commandeering of their boats and expropriation of the cargoes. This was a frequent occurrence during the unsettled political period of the late 1920's, and later during the Japanese attacks on Shanghai in 1932 and 1937, as well presumably as the wartime period and the large-scale civil war which shortly followed it. Civil order has unfortunately not been the rule in this area during the past thirty years. In October 1926, despite an excellent harvest just gathered, large amounts of rice already in storage in Shanghai and the accumulated demand in the city after the mid-autumn festival, a local uprising in Chekiang and troop movements connected with it in Kiangsu brought water transport to a complete halt in the delta south and west of Soochow. As a result, the Shanghai price of rice nearly doubled instead of falling as it otherwise would have done. The railways to Hangchow and Nanking were kept open during the entire period. In this case the rice supply situation was eased by shipments on special order from Tsingpu, Sungchiang, and other nearby areas removed from the trouble.*

* Rice was stored both in Shanghai and in the collection centers in the local producing areas. However, the Shanghai rice market was very sensitive to day-to-day changes in the supply arriving from the local areas. This suggests that relatively small amounts of rice were stored in Shanghai, and that the market depended on regular shipments. When these were interfered with, it was not possible for the Shanghai rice merchants to keep the Shanghai price from rising, since orders for foreign rice could not normally be delivered in less than two weeks. The hiatus in local supplies during the planting season was of course anticipated by the Shanghai merchants in the form of advance orders for foreign rice which were delivered during May and June, but even so the price of rice rose during this period, as indicated above, further evidence that the market was dominated by local supplies moving regularly to the city during most of the year.

2: Murphy G-4 (no date) 1953 AF15 East China AF15

came to a standstill at frequent intervals during these years.[24] They also mention the Shanghai prejudice against eating foreign rice and state that it is consumed only when local supplies are unobtainable.[25] The Taiping Rebellion was suppressed and Nanking recaptured by the Ch'ing forces in June 1864. By 1865 the Shanghai consular report shows the virtual disappearance of foreign rice imports.[26] Apparently Shanghai was not at that period acting as an entrepôt for rice imports to other cities.

It has been a widespread opinion in China and outside it that the large cities of east Asia, including Shanghai, have depended for their growth on the import by sea of foreign rice from the surplus rice areas of Indo-China, Burma, and Siam. Various students of the problem have gone far enough to examine the rice import figures recorded by the Maritime Customs and to compare them with population growth, finding that in the case of at least the south China treaty ports overseas rice imports have increased faster than the population, and concluding that these cities would starve if overseas imports were cut off.[27] Aside from the fact that much of the foreign rice entering Shanghai is destined for other places, what statistics are available, when added to the evidence of the market reports, demonstrate that the part played by foreign rice is minor in the case of Shanghai.

If Shanghai is indeed an exception in this respect, an explanation may logically be found in the combination in its immediate hinterland of heavy rice production and highly developed water routes. There is no significant correlation between the size of the delta rice crop in different years and imports of foreign rice. The years of large import did however coincide with unusual conditions in the delta which affected primarily the movement of goods by water rather than the actual rice crop. Transportation rather than production would appear to be the key.

While the quantitative importance of foreign rice is minor within the general supply picture, it is certainly true that for recurrent short periods foreign rice has filled large gaps in the Shanghai market. Even in normal years, foreign rice came in during the local planting season, and in years marked by civil disorder or natural calamities in the delta it accounted for a quarter [illegible] third

439 of Shanghai's rice consumption of something like one billion pounds over the year as a whole. The supply situation was 435 determined by price, and foreign rice was imported not necessarily because local rice was unobtainable but because its Shanghai price at certain periods rose considerably above the Shanghai price of foreign rice.

The price problem posed by the hiatus in local supply during the planting season might have been overcome without bringing in foreign rice, by carefully planned advance buying and by distributing price fluctuations for local rice more widely over the year as a whole. This solution was theoretically in the power of the Shanghai rice merchants, and it has since been applied at least to a degree by the Communist Government (see Chapter Eleven). But it is doubtful whether Shanghai could have existed without foreign rice imports during the periods of civil war and floods which disrupted its water connections with the producing areas. At such times, a high enough price in Shanghai could presumably have attracted to the city from the local areas adequate rice to feed its population despite the difficulties and dangers of water transport, but workers' families and other low-income groups, which constituted the great majority of the population, would have been priced out of the market.

722 The situation after 1936 was complicated by the Japanese invasion 439 and conquest of the delta in 1937. Japanese military requisitions drained off increasing amounts of the delta's rice crop, and fighting over the area reduced total production and hampered the movement of rice to Shanghai. The city became increasingly dependent on foreign imports of rice, and by 1940 relied almost entirely on what it was able to import from Saigon. The unsettled political situation, in which the foreign settlements remained until Pearl Harbor in theory outside Japanese control but increasingly subject to Japanese influence and threatened with total absorption, en- 435 couraged hoarding and speculation. Curtailment of local supplies created an actual shortage, and these factors together resulted in a tripling of the Shanghai price of rice between 1936 and 1941.

[579] Rice riots in the city became frequent, and Shanghai's normal dependence on its local rice supply areas was increasingly borne in upon all of the cities population.

2: Murphy G-4 (no date) 1953 AF15 East China AF15

upon all of the city's population. A leading commercial journal in the city remarked in 1940 that "Shanghai is an island cut off from the normal sources of supply of its staple food," and went on to point out that rice selling at that time in Wusih for CNC$15 per picul of 172 pounds sold for CNC$90 per picul in Shanghai, a price difference which certainly reflects transport difficulties as well as the abnormal situation in Shanghai. The Shanghai price of imported rice quite naturally rose to meet this level.[28] At scattered intervals during this period from 1937 to the end of 1941 when conditions permitted relatively safe water shipment to Shanghai from the delta, local rice appeared on the Shanghai market in large quantities and the price of rice from all sources dropped to nearly its pre-war levels.[29]

The part played by out-province rice is difficult to evaluate. The market reports already referred to indicate that except during the planting season out-province rice is unimportant on the Shanghai market, and at all periods under normal conditions is less important than foreign imports.[30] However, complete figures for out-province shipments of rice to Shanghai do not exist, doubtless due, at least in part, to the fact that much of it moves to the city in small boats, a flow difficult to measure. The market reports give the impression that most of Shanghai's out-province supply comes (in order of importance) from Wuhu (the chief rice center of Anhwei), the lowland areas of Kiangsi connected by lakes and rivers with the Yangtze, the lowland areas of northeastern Chekiang, and the western and southern shores of Tung Ting Lake in Hunan. All of these sources have direct water connections with Shanghai.

If the earlier opinion that Shanghai, among the other treaty ports, depended for its growth on overseas imports of rice is no longer tenable, it is perhaps reasonable to question whether at least Canton may not have profited from its similar location. The Hsi delta is the closest parallel in China to the Yangtze delta, although on a smaller scale. Like the Yangtze delta, it is a heavy rice-producing area which also contains a highly developed network of natural and artificial waterways. Kwangtung as a whole is a rice-deficiency area, and foreign imports of rice to Canton may not be destined entirely for

2: Murphy G-4 (no date) 1953 AF15 East China AF15

the province where arid north China fairly begins, and where water transport facilities are limited. Eggs also come to Shanghai from places up the Yangtze valley as far as Hankow, transported in bamboo crates holding from 500 to 1000 eggs and carried entirely by water. 40 per cent breakage in transport is given as an average figure.[39] This apparently does not make the longer hauls uneconomic, and implies that cheap transportation is an important factor.

Fish, however, after cereals and vegetables, is the most important protein-supplier in the city's diet, and Shanghai handles one third of the fish and marine products marketed in China annually for which there are market records. Seasonal variations in the catch and lack of adequate cold storage facilities make for violent fluctuations in the price of sea fish, in the case of one common species from a yearly low of CNC$3 per *shih* (200 pounds) to a yearly high of CNC$50 per *shih*. A good catch is often disastrous to the fishermen because it depresses the Shanghai price below cost, since in the absence of cold storage the fish must be sold within a few days.[40]

Shanghai's fishing fleet in the 1930's was about two-thirds sailing junks and one-third steam trawlers, both of which packed their catch at sea in iced barrels. In summer, spring, and autumn the packing preserved the fish for only about two days in this climate, and a premium was put on quick marketing. The fishing boats were allowed only a limited amount of salt for preserving, in order to prevent smuggling abuses. The main fishing grounds off the coast of central China are approximately fifty miles to the seaward of the Chusan Islands, or about 140 miles from Shanghai, a good two days' run for the junks and not much less than that for the trawlers. The catches are of course not all made in one day, so that fish arriving in Shanghai might be as much as four or five days old and in a questionable state of preservation.[41] Small fast power boats from Shanghai met the fishing fleet at the fishing grounds when the catches were good and rushed the fish to market in the city, but this stratagem greatly increased the cost and did not remove the need for making an immediate sale.[42] Dried and salted fish comes to Shanghai mainly from small villages and islands along the coast of northern Kiangsu and southern Shantung, where it is pre-

2: Murphy G-4 (no date) 1953 AF15 East China AF15

The reason for the absence of a steel industry in China, or in Shanghai, was the inability of the industry to meet the price of foreign imports. China's total iron ore resources are not inconsiderable, but in the Yangtze basin, where most of the production attempts have been centered, the ore deposits are small and scattered so that their exploitation imposes high costs. Small deposits of coal are also found in scattered localities along the lower Yangtze, but the combined costs of mining and of transport to production centers were too high to permit economic iron or steel making.[24] In the case of Shanghai, not only did these factors operate despite its water connections with the ore and coal deposits along the Yangtze, but as a seaport it could not produce iron or steel from domestic or foreign ore at anything like the price of seaborne imports of foreign iron and steel. Fortunately its maritime connections enabled it to draw on foreign sources for iron and steel and to produce finished metal goods at a cost which still allowed them to compete in the China market with foreign imports of finished metal goods.

Among the large metal-using industries, the vehicle plants (aside from the shipyards of the Kiangnan Arsenal before 1932) imported almost all of their finished steel plates, wire, rods, tubing, and other semi-finished steel products, and most of their cast iron, directly, or indirectly as recastings from iron and steel scrap. The same was true of the plants producing machinery, with their large use of more highly-finished steel products and special steels.[25] The nine large-scale modern shipyards produced primarily river and small coastal craft, the largest ship built up to 1932 being of 11,000 net tons. The steel, production machinery, and most of the engines installed in these ships were imported, and yet it was still apparently possible for the yards to compete in the China market with European, Japanese, or American yards. In 1930 the nine yards turned out a total of 71 ships with a gross tonnage of 17,839, and an average tonnage of 240.[26] There were also about 30 smaller shipyards building Chinese-style wooden craft, from canal sampans to large coastal junks.[27]

Among the other metal-using industries, the food canning and can-producing plants in Shanghai imported all of their tin plate, primarily from the United States.[28] China has significant deposits

2: Murphy G-4 (no date) 1953 AF15 East China AF15

381 theless industrially out of gear with the rest of China to such an
439 extent that the match industry imported even its paper and card board.*

Chinese sources could maintain Shanghai's soap manufacturing using relatively bulky agricultural raw materials, but the match industry, dependent on relatively finished and specialized materials, was obliged to rely predominantly on overseas sources. The city's market was able to hold both of these greatly dissimilar enterprises, each typical of much of its manufacturing complex.

306 The jade-cutting industry may be cited as a final illustration of
439 the market-oriented character of Shanghai manufacturing as a whole. While jade-cutting would presumably be less likely than diamond-cutting to gravitate to primate financial and banking centers, it is equally dependent on specially skilled labor, which is most often found in the largest cities, and on the commercial services and connections of a primate market. Most of the world's jade is mined in northern Burma, but Shanghai, rather than Rangoon or Calcutta, was the world's leading jade center for cutting, polishing, and marketing. It imported its rough jade from Burma by sea, paying a 50 per cent export duty *ad valorem*, and sold the finished product not only in China but all over the world. Japanese attempts at competition in this industry during the 1920's failed to dislodge Shanghai from its leading position.[35] An early start and accumulated skill have been more important in this industry than in almost any other, but it was the Shanghai market which attracted and continued to hold it.

The Cost of Raw Materials

435 It will be useful to estimate the percentage of total costs which is represented in different Shanghai industries by the cost of delivered raw materials in order to throw light on the competitive position of the city as a location for manufacturing. The published estimates of costs are contradictory, and the implication is that accurate information is not available, an understandable condition in view of the

* The relative importance in Shanghai manufacturing of the industries discussed above (pp. 171–178) is indicated by the tables above on pages 168, 169, and 170. Consumption figures are unfortunately not available.

2: Murphy G-4 (no date) 1953 AF15 East China AF15

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complex industrial and administrative picture in Shanghai as outlined in the first section of this chapter. The following figures should therefore be read as the roughest kind of approximations, and conclusions should be drawn from them only with great caution.

The table below, according to Liu's survey of 1934, gives estimates of the percentage of total costs represented by delivered raw materials in each of the eleven leading Shanghai industries (by value of output).[36]

Industry	*Raw Materials' Percentage of Total Costs*
cotton spinning	65
flour milling	73
cigarettes	40
matches	68
silk filatures	72
chemical (including soap)	45
cotton weaving	74
rubber goods	48
silk weaving	63
knitted goods	65
machinery	72

These figures are incredibly high, especially for the textile industries, where not only are local supplies of raw materials readily available by water transport, but where the amounts of power and labor necessary are relatively great. The figures must reflect very low proportionate costs for labor and for power. The figures for the textile industries are hard to reconcile with that for cigarettes (which is itself about what one would expect—40 per cent), considering the much greater distances over which the leaf tobacco must move to Shanghai, and the difference is not explained away by the relatively larger amounts of labor necessary in the cigarette industry. The figure for the chemical industries seems reasonable, including the separate figure for matches, as well as that for rubber goods, considering the large proportionate amounts of labor necessary. The figure for flour milling, however, also seems high, despite the large importance of foreign wheat imports. Presumably it also reflects low

2: Murphy G-4 (no date) 1953 AF15 East China AF15

435 proportionate costs of labor and power. The same comment applies to the high figure for machinery.

288 In a generally more careful work dealing only with the cotton
435 industry, Fong Hsien-ting, as shown in the accompanying table, provides a different estimate of costs in the production of cotton yarn in Shanghai in 1930.[87]

Cost Item	*Percentage of Total Costs*
raw cotton	42
labor	30
power	8
overhead and interest	20
	100

These seem much more reasonable, and they are generally substantiated by the findings of Moser and of Pearse.[88] Liu's figures for cotton spinning are also suspect because in 1934 a larger proportion of the mills' supply was the cheaper domestic cotton (see above, p. 172). If we may accept these figures of Fong's as a closer approximation to the facts than Liu's, we have at least some idea of the proportionate cost of delivered raw materials in Shanghai's largest industry, cotton spinning, and we may justifiably assume that this cost was of approximately the same order of magnitude in the other cotton industries and in the silk industries, since Liu's figures show a maximum spread of only 10 per cent among the raw materials' cost in the textile industries which he covers, and since both cotton and silk supplies came very largely from the local delta area. We have unfortunately no check on Liu's estimates of raw materials' costs in other leading Shanghai industries. Since with the exception of flour milling and machinery, these other figures seem reasonable, we can only accept them with caution.

435 Even after this revision, however, the best estimate which can
489 be made of the proportionate costs of raw materials in Shanghai manufacturing still shows these costs to be high by Western
[465] standards.* There are two major reasons for this: the relatively low cost of labor, and the relatively high cost of transport. The first

*The United States Census of Manufactures for 1939 gives value figures for manufacturing costs in major categories of manufacturing in the United States in

2: Murphy G-4 (no date) 1953 AF15 East China AF15

condition operates to approximately the same degree in all Chinese industrial centers.[39] The second oper .es for all Chinese industrial centers, but not to the same degree.

Only two important carriers are involved: railways and waterways. Highway transport by truck remains negligible in China, relative to the scale necessary for the maintenance of modern manufacturing, and with the shortage of fuel, vehicles, and parts as well as of adequate roads it is an impractically expensive carrier. Non-mechanized overland carriers in general use in China (porters, wheel-barrows, pack animals, carts) are also notoriously expensive, and are inadequate to handle volume movements.* Representative rates for railway transport of bulk goods (exclusive of coal) in carload lots in China during the 1930's ranged from the equivalents of US$.02 to US$.07 per ton/mile.[40] This compares with an average ton/mile rate on United States railways during the same period of about US$.01.[41] Accurate or even representative rates for water transport in China are not available, but the average for unobstructed inland routes may be estimated at between US$.018 and US$.02 per ton/mile during this period. In any case, where adequate water transport is available in China, it is a cheaper carrier than railways under present conditions, and can handle bulk shipments.

As we have pointed out above in Chapter Seven Shanghai is not a major rail center, and the two railways which serve it are not

that year under five headings. Expressed in percentage terms, these costs are tabulated, for United States manufacturing as a whole, and for the textile industry in the United States:

	All Manufacturing (%)	*Textile Manufacturing (%)*
labor and salaries	53	57
materials and supplies	37	35
fuel	2	1
purchased electric power	1	4
other	7	3
	100	100

"Materials and supplies" is not defined. No figure is given for overhead and interest, so that all of these figures must be scaled down in order to make them comparable with the figures cited for Shanghai.

* Average ton/mile rates for truck transport in China range from the equivalents of US$.30 to US$.50. For porter and wheelbarrow they often reach US$1.00 per ton/mile.

2: Murphy G-4 (no date) 1953 AF15 East China AF15

489 large carriers. The city's water connections, however, are uniquely good. (They have been outlined in some detail in Chapters Four and Seven.) It may be assumed that the cost of most delivered raw materials in other Chinese industrial centers was a higher percentage of total costs of production than in Shanghai. This assumption is borne out in the case of Tientsin. Tientsin is not only an ocean port through its association with Taku, but it lies on the Grand Canal and is, after Peking, the second most important rail junction in China. It lies at the focus of an even more extensive lowland (the north China plain and the basin of the Yellow River) than does Shanghai. Tientsin's water connections over this lowland are slight compared with Shanghai's water connections over the Yangtze basin, but with the possible exception of Hankow Tientsin nevertheless has the most favorable orientation to transport routes of any Chinese industrial center after Shanghai.

288 435 Fong Hsien-ting found, in comparing production costs in the spinning of cotton yarn (also Tientsin's largest industry by value of output) that the cost of delivered raw materials in this industry in Tientsin averaged about 70 per cent of the total cost of production, as against an average of 42 per cent for Shanghai (see above, p. 180). Yet Tientsin also lies near the center of one of China's leading cotton-producing areas, through which three railway lines run to the city. Fong's cost estimates for the Tientsin cotton yarn-spinning industry, by percentages of total costs, are shown in the accompanying table.[42]

Cost Item	*Percentage of Total Costs*
raw cotton	70
labor	15
power	7
overhead and interest	8
	100

It does not seem possible that the costs could be divided as Fong has estimated. The figure for raw cotton seems too high, and that for overhead and interest too low. Power is cheap in Tientsin, due largely to the proximity of the Kailan mines at Kaiping, 82 miles north by rail, China's largest producer of coal, and the chief source of Shanghai's coal supply as well. The figure for labor costs is of

2: Murphy G-4 (no date) 1953 AF15 East China AF15

course depressed by the high figure for raw cotton. Nevertheless it seems clear that Tientsin, despite its rail and water connections and its location in a major cotton-producing area, paid a considerably higher price than Shanghai for delivered raw cotton. If this was true for raw cotton, we may assume that it was true for most of the other industrial raw materials consumed in Tientsin, with the obvious exceptions of coal and the wool, hides and skins of north China, and the possible exception of wheat.* If Tientsin could obtain the necessary raw materials in these latter cases more cheaply than Shanghai, this is further evidence of the paramountcy of the Shanghai market and of the market-oriented character of its manufacturing. If Tientsin paid a higher price than Shanghai for most delivered raw materials, we may assume that other Chinese industrial centers did so too.

Water transport has been a key factor in the development of manufacturing in Shanghai. The city's railway connections are inferior to Tientsin's, and yet its manufacturing apparently paid less for most of its raw materials, and in fact was a greater consumer than Tientsin manufacturing of the leading industrial raw materials of north China: coal, hides, and wheat, all of which can move to Shanghai by sea from north China ports. In turn, the primacy of the Shanghai market depends in large measure on the water transport network which includes half of China in the city's tributary area. The market is able to exercise its attractiveness for manufacturing of all kinds by its ability to draw to its generally resource-poor area by sea and river transport the industrial raw materials which it needs.

Coal and Electric Power

The single most important industrial raw material, coal, has been left for final consideration, since it plays a major role in nearly every industry, directly, or in the form of electric power.

* Shanghai nevertheless led Tientsin in the 1920's and 1930's in the consumption of coal and in the production of leather goods and flour, and in fact shipped nearly 10 per cent of its total flour production to Tientsin on an annual average. (For comparative figures on consumption of coal and production of leather goods and flour, see respectively Leonard Ting, "The Coal Industry in China" (1937), p. 217; Chinese Year Book (1936), p. 1153; Y. C. Chang, "Flour Milling in China" (1922), p. 219).

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

The depression into which industry fell following the outbreak of Pacific hostilities rendered even more difficult the task of obtaining any improvements. The cost of raw materials rose steeply. It was beyond the financial power of factories which could continue operations to buy sheet metal at greatly enhanced prices for machine guards. Even timber reached a price where its purchase was almost impossible. The smallest alteration to a building to render it more suitable cost considerable sums, for, in addition to an increased cost of materials, labour costs greatly increased. Certain commodities were quite unobtainable. To install an exhaust fan cost a large amount. To raise the height of a chimney would in some cases eat the profits of a month's operations.

Obviously progress in the physical betterment of industrial conditions must be measured in decades, not in years. It is dependent on a restoration of the political sovereignty of China; for only with this can there be a sufficient improvement of the economic situation to secure among the industrialists at large a conscious aim of providing more suitable premises, more adequate safety measures, better hygiene, shorter working hours, and all the other factors which contribute to the provision of a better life for workers.

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

earnings of the principal wage earner provided only 53.3 per cent, other members contributing 34 per cent. An amount of 12.7 per cent had to come from other sources. It is thus obvious that the earnings of a principal wage earner were but a relatively small part of the family income, and that the earnings of a least a second member of the family were needed. In addition to the earnings of both of these, financial support from relatives and friends had to be sought, or borrowing from moneylenders was necessary; otherwise income had to be obtained from such activities as peddling or sub-letting rooms.

The average family expenditure was $454.38, leaving an average annual deficit of $37.87. If income from wages earned by all family members only is considered, disregarding income from other sources, the average annual deficit was found to rise to $121.23. The excess of the family expenditure over the income of the principal wage earner was greater still. Working-class families, it goes without saying, spend extremely carefully; the majority of their expenditures are for basic needs.

It may be assumed that the 1929-30 standard of living remained virtually unchanged until the end of 1936, the last normal year before Sino-Japanese hostilities. The cost of living index (1926—100) was at 101.98 in 1929, 116.79 in 1930, and 105.04 in 1936. In other words, costs in 1936 were approximately what they had been in 1926, and below the 1930 level.

The outbreak of hostilities in August 1937 affected extensively the livelihood of the workers. The 1926 base period of the index, being remote in time, ceased to be significant, and in 1938 the index was recalculated on a 1936 base. Changes in living costs were somewhat slow to appear since not until August 1939 did the index figures show the cost to be double what it had been in 1936. Thereafter, however, changes were rapid. Certain basic foods disappeared from the markets. By the beginning of 1940, *sien mee*, a popular native rice, was no longer procurable, and second-grade Saigon rice replaced it as the people's food. *Kan mee*, a non-glutinous Chinese rice, reached the Shanghai markets only in small quantities and at high prices. Finally, in February 1941, orders for Saigon rice could not be placed in Indo-China, and Saigon rice in turn was replaced as the workers' food in May 1941 by Rangoon rice imported via Hongkong by the Settlement

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

511 authorities.[3] There were concurrent changes in the types of fuel
435 in common use. Charcoal and firewood were replaced by coal
458 briquettes. Accordingly very careful alterations in the basis of the index figures of the cost of living of Shanghai workers were made, disturbing the index as little as possible, but taking account of the changes in consumption. In July 1941 a Revised Index embodying these changes was first published.

511 Since price levels continued to rise, it became apparent that
458 a sample re-study must be made of the consumption habits of the workers which change when money buys less. This re-study was in progress when the Pacific war broke out. Records of the daily expenditures of 101 families were obtained for the months of December 1941 and January 1942. With the facts thus obtained a New Index was calculated, based on the standard of living of the months mentioned with average prices in Chinese National Currency ruling in 1936 as 100. The annual New Index figures for the years since 1936 were: 1936—100, 1937—119.08, 1938—150.62, 1939—197.52, 1940—428.35, 1941—826.24. By May 1942, the figure had reached 2,663.21. In this month Chinese National Currency fell sharply in terms of the new currency introduced by the Nanking Chinese Government with the support of Japan. These new currency notes of the Central Reserve Bank, referred to as CRB notes, were declared the only legal tender in June 1942. In that month the value of the Chinese National Currency in terms of the new currency was further devaluated until two dollars CNC were equivalent to one dollar CRB at official rates. Unofficial rates were more disadvantageous. Despite efforts at price control by the Shanghai Municipal Council, the occasion of the currency changeover was taken by many shopkeepers to raise prices by converting CNC prices unchanged into CRB prices, thereby automatically doubling them. The June index figure derived from prices expressed in old currency reached 3,870.48. Expressed in new currency the figure for that month was 1,935.24 at the official rates ruling. The following table indicates the position in the index figures of cost of living of Chinese workers from March 1942, when Chinese National Currency and Central Reserve Bank Notes, previously circulating at par, began to diverge:

[3] See Chapter VIII, p. 96.

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

cost in 1936, the principal wage earner would have had to earn 53.3 per cent, or $14.76 per month. A second member would have had to earn 34 per cent, or $9.42. Elsewhere $3.53 or 12.7 per cent would have to be found. These earnings were possible in 1936. Even unskilled male workers in textile plants, a low-paid industry, earned $16 a month. True, even then the gap between earnings and the total family income needed was wide and necessitated borrowing. But when costs rose, when the index figure of July 1942 was 2,163.51 with prices expressed in Central Reserve Bank Notes, income necessary for the maintenance of a family exceeded what most industries which continued to operate could pay. A principal wage earner would have had to earn CRB $325.32. A second wage earner, always assuming that work could be found, had to bring in CRB $65.31, and other income chiefly from borrowing and amounting to CRB $100.79, had to be found. Since few workers could in July 1942 muster this sum, though founded on standard of expenditure as recent as December 1941-January 1942, it was obvious that the standard of living even for those workers who continued to be employed was still declining. A careful calculation of the minimum needs of a family in July 1942 showed that CRB $426.54 was needed, with a principal wage earner producing $282.375. Since few workers would reach even this standard it follows that a considerable proportion of the community was living below subsistence standards.

In the months that have elapsed since the middle of 1942 the situation has, from all available evidence, still further deteriorated. Accurate figures are lacking. The misery was so great that it seemed it could not be worse. Yet an even greater cost has been exacted of a long-suffering people.

CONSIDERATION OF THE figures given above shows clearly that the basis of remuneration of workers by which the principal wage earner did not earn enough for the needs of his family so that other income must be obtained through the efforts of other members of the family and from other sources was unsatisfactory.[4]

[4] The question will of course be asked, "How does the family live?" The answer is, to use the words of a Chinese observer, "By moving the debts." Short-term loans at high interest successively added to by others are contracted. The following is the load position of one low-paid employee who borrowed eight times in three years:

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

Discrepancies between earnings and costs tend to become aggravated when living costs rise. The difference between what a principal wage earner could earn and what it cost his family to live became so wide that a serious lowering of living standards inevitably resulted.

To help to check the inflationary tendencies which from 1938 onward appeared, wage levels should in theory not have been permitted to rise. Instead, price levels should have been fixed and spending sharply reduced. The currency of the Settlement was that of the Chinese government faced with fighting a long war. With the provinces near Shanghai in Japanese military control and there being, for a long time after the withdrawal of the Chungking authorities from Nanking virtually no government in the area, there was no possibility of such organised measures being put into effect. With rising living costs the only alternative, therefore, was to raise earnings standards, though admittedly this contributed to further price rises. Moreover, it is one thing to limit spending in a country where there is a margin which can be eliminated and another to do so at the risk of seriously reducing the standard of living. In Shanghai where workers must spend all of their earnings and more on basic necessities, to limit spending presented, to say the least, a difficulty.

Studies of wages and earnings in 1941 show that industry, both foreign-owned and Chinese-owned, attempted to bridge the gap between rising living costs and what the pay envelope contained. On a 1936 base of 100, the earnings index of Chinese-owned plants in 1941 stood at 457.65, an increase of almost 100 over the earnings index of 242.65 in 1940. In foreign-owned plants the earnings index was 465.54 in 1941. Though slightly below the earnings index of Chinese-owned plants, the money earnings in foreign-

Creditor	*Amount of loan*	*Interest*	*Currency of loan at time of enquiry*
A Sikh	$20	$2 per month	30 months
A friend	50	5 "	24 "
A woman	30	2 "	24 "
A widow	25	1.50 "	12 "
		Principal and Interest	
A liftman	15	$6 per month	6 months
A fellow worker	15	6 "	5 "
A chauffeur	15	6 "	3 "
A chauffeur	20	8 "	2 "

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

CHAPTER VIII

FOOD AND NUTRITION

AT A TIME WHEN Shanghai is militarily occupied following the outbreak of Pacific hostilities, and its food supplies subject to willingness of the Japanese military to provide them, one is apt to think of the problem of food entirely in terms of whether or not there will be any at all. From the moment of the commencement of hostilities in August 1937, the question of food supply held the concern of the Settlement authorities. Two days after the first shot was fired in the Shanghai area, the Supplies Committee of the Shanghai Municipal Council met and through the intervening years dealt with the problem actively and continuously.

The problem at first was what the city would do when it was cut off from its hinterland, the rice-producing area; when fighting moved back into the provinces and destroyed the autumn rice crop; when rice boats would no longer bring rice to the city. In 1932, when there had been five weeks of fighting in the Shanghai area, rice boats had feared to come into the city, and trucks had been sent out to meet them beyond the fighting zone, to bring in needed food. Rice, which then usually sold at $10 to $12 per *shih* (172 pounds), rose to the high price of $17 to $18 because of fear of shortage, and fell with what at that time seemed a dramatic drop when the supplies were brought in and the feared shortage did not eventuate. Those who had planned the small adjustment needed in 1932 found that more drastic measures were necessary in 1937 and later.

The provinces nearest to Shanghai are rich rice-producing areas. Through part of Kiangsu province winds Soochow Creek, and from Chekiang province into Kiangsu flows the Whangpoo River, to meet in Shanghai. Down both of these waterways in normal times came a succession of large rice boats, and from Wuhu above Nanking on the Yangtse River larger steamers laden with grain. In general it was a simple trade. Rice was sent on consignment to rice merchants in Shanghai, and payment was later made to the interior

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

ing of the treaty with Nanking on November 30, 1940, it was announced that high Japanese military authorities in Nanking had agreed that, subject to meeting the needs of the army and with certain other reservations, rice collection should be a function of the Chinese authorities. Actually little Chinese rice was made available to Shanghai.

There were ample stocks of rice in Burma, but there were no ships to bring it to Shanghai. This was well known, not only to rice dealers in Shanghai, but to the general public. Therefore, despite the presence of a large reserve supply in the warehouses of the city, the retail price of rice rose at an accelerating rate until in May 1941, as a result of private profiteering and public fear, it reached the till then unprecedented height of $145 per *shih*.

It can readily be understood that with such difficulties in feeding the Settlement, major emphasis had to be placed on ensuring supplies. Even though high prices were undesirable, it was important that there should be supply at any price. Rice riots have occurred more than once since 1937.

The distressing effects of high prices were illustrated by the practice of "rice sweeping" (and, indeed, the snatching of other commodities such as raw cotton) which became a frequent sight in the city as a consequence of the rising prices. When a truckload of rice halted at a traffic intersection, a dozen waifs, adult and adolescent, appeared from nowhere, moving like lightning. In a twinkling one or more rice bags were pierced with knives, and as the precious grain began to run out, it was scooped swiftly with the dust of the roadway into a receptacle. The "sweeper" would often disappear before any police could act. But if caught, he or she appeared next morning in the First Special District Court, that busy court which dealt with an average of 10,000 cases each month. Detention followed; but the need that prompted the snatching remain unfilled.

ALTHOUGH IN THE CRISIS of 1937 the Shanghai Municipal Council had intervened to bring rice to Shanghai, it had no desire to interfere with the normal trade in rice unless forced by circumstances to do so. When faced with the crisis in March 1941, therefore, the Council decided that it would charter ships, possibly with the assistance of the British Admiralty. Space could then be sold to rice importers. At the end of March the Council announced this intention and appointed a special committee of businessmen under

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

633 the chairmanship of one of its own members to deal with the
438 matter.
262 But it proved impossible to secure the desired ships, and the outlook for Shanghai appeared dark. The authorities were therefore much relieved when in April the Government of Hongkong requested the Shanghai Municipal Council to act as its agent in disposing of stocks of Rangoon rice which had been held in Hongkong as a reserve but could not be kept indefinitely without deteriorating. An arrangement was concluded whereby the Council agreed to receive enough for the Settlement's needs at a price which would enable the Hongkong Government to replenish its stocks through imports from Rangoon.

262 On April 26, 1941, when second-grade Saigon rice was quoted
435 at $126 per *shih* in the Shanghai rice shops, the Council announced its intention to import Burmese rice from Hongkong. Speculators
438 who had been hoarding rice made last-minute efforts to sell at high
633 levels. Prices rose steadily until May 3, when $145 was quoted for second-grade Saigon rice, but during the next fortnight they dropped, until May 17, when Council rice at $110 per *shih* was placed on sale in the retail shops. The "racket" for the moment was broken.

435 Ever since 1937, the Council's Supplies Committee had wrestled
633 with the question of price control. The rice trade appointed a "Shanghai Rice Price-Fixing Committee" whose decisions could,
262 according to Chinese Law, be enforced in the First Special District Court. During 1939 it fixed a price endorsed by the Council, of $40 per *shih*, which, however, was soon exceeded; and a "black market" developed where deals were consummated at prices considerably beyond this price. During 1940 the question of price-fixing generally was again exhaustively examined by a special subcommittee of the Supplies Committee. One result of its work was the adoption by the Council of measures requiring clear marking of the prices of daily necessities sold in the Settlement. The aim of this was to induce competitive selling on the part of vendors, and to permit the buying public to discover where goods were most reasonably priced. The Council, together with the French Concession administration, published regular price lists of necessities, also with the idea of informing the public where goods could be most reasonably purchased. In June 1940 the Council established

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

a Price Investigation Office within the Public Health Department in an effort to curb profiteering and to check abuses in connection with food supplies. After six months' intensive work, this Office recommended that price-fixing should not go beyond voluntary measures.[1] The report listed the following arguments against the introduction of compulsory price-fixing of basic commodities at that time:

1. The magnitude of the problem and the lack of means on the part of the Council successfully to enforce compulsory price fixing in the International Settlement, where so many different national laws apply.[2]
2. The present abnormally high cost of nearly all staple commodities, due primarily to the military occupations of the areas surrounding Shanghai resulting in various forms of interference with the normal influx of such commodities. Whether the interferences are due to military necessity is beside the point, because, in any case, no fundamental solution of the problem can be accomplished without the assistance and good will of the Imperial Japanese Forces.
3. The question of the value of the local currency. Its effect, directly on imported goods and indirectly on domestic products, is beyond any control measures the Council might wish to enforce.
4. The fact that the Council would be unable to fix reasonable profits for importers and wholesale dealers. Control of retail prices alone will always be of a petty nature as long as no shortage of supply exists. Business competition and ordinary common sense amongst the purchasing public should tend to render retail profiteering relatively insignificant.
5. Should it be decided to fix maximum prices both for markets and shops, two or perhaps three different prices would have to be fixed for identical products in accordance with the location, class and overhead expenses of the various shops.

THERE WERE SEVERAL efforts to make staple foods available to poorer sections of the community at less than ruling prices during the period prior to the outbreak of Pacific hostilities in 1941. The "Shanghai Rice Cheap Sales Committee," composed of senior

[1] There was some basis for such a recommendation, even though the situation was such that control was necessary. In Shanghai where many nationals had extra-territorial rights, the means to secure compliance through national consular courts were difficult to find. The Council was of course quite unable to control the purchasing power of the Chinese currency.

[2] In October 1941 the Provisional Council, acting under new powers conferred on it by the Ratepayers in April 1941, passed a Byelaw aimed to control profiteering and hoarding. A Municipal Byelaw is enforceable against nationals of all countries, and overcomes the difficulty of differences in national laws.

3: Hinder G-5 (1938-1942) 1944 AF15 East China AF15

435 members of the Chinese community, purchased broken rice and
262 sold it through rice shops to the needy through eight periods of
633 several weeks each. A total of 223,200 bags was distributed, the organisation making a contribution of more than two million dollars, the difference between the cost of the rice and the returns through sales at lower prices. In a similar effort to supply food to the poor, from February 1940 onward, the larger Chinese flour mills made available several thousand bags of flour daily at considerably less than the market price, to be sold in small quantities, also through shops regularly selling flour. More than two and a half million bags of flour were thus provided. Several importing firms also played their part in handing over ten per cent of all incoming flour consignments, totalling 185,000 bags, to reliable dealers for sale to actual consumers. Important as these efforts were they could not ease to any great extent the difficult situation.

741 The very substantial arrivals of rice and wheat from the Amer-
262 ican Red Cross for relief purposes also played their part. This
146 grain was distributed to organisations caring for numbers of needy people. Many refugee camps, hospitals, and institutions caring for children were the recipients of this food. The form in which the wheat came proved to be particularly suitable. It was "cracked wheat," wheat submitted to the first processes of milling only, consisting of the whole grain merely cracked. In consequence the precious germ of the wheat was still present, containing within it the important vitamin B complex which is significant in nutrition and in the prevention of such recognised dietary deficiency diseases as beriberi. The nutritional results for those fortunate enough to receive it were dramatic. Instead of gross signs of deficiency and the less dangerous but serious malnutrition which were everywhere prevalent, by comparison a glowing health appeared in institutions using the cracked wheat, though it could not provide all the needed protective foods.

435 In August 1941, the Chinese Government ruled that foreign
633 exchange would be obtainable only through its Stabilisation Board.
439 It then appeared that an instrument might become available which
262 would give the Council actual power to control prices of imported staple products other than rice which was already controlled through the agreement with the Hongkong authorities. The Board was sympathetic to the view that exchange for essential commodities

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

should be granted only through the Council; and the Council in turn would allot it only to those merchants who would sell to retailers at a price fixed from time to time by the Council. As a means to control the final sale to the people, the Council sought and obtained from the Consular Body approval of a Byelaw empowering it to control prices at retail. On November 9, 1941, a Proclamation fixed the retail price of all imported rice at $130 per *shih*. The registration of all stocks of rice and flour was called for, and all movement of these commodities without a permit was forbidden as a means to keep them under control.

THIS WAS THE FOOD situation when Pacific hostilities supervened on December 8, 1941. It was fortunate that controls over essential commodities had begun, for there was thus in being the nucleus of what was, within six months, to become an extensive organisation controlling the issue and price of rice, flour, and other commodities. The Council had even, before December 8, examined in some detail what would be involved in rationing.

Soon after the opening of 1942, the Council issued a notification requiring holders of stocks of imported rice and of flour to deliver them against delivery orders issued by the Council, thus requisitioning at a fixed and fair price the stocks which the city held. It proved fortunate that in the early months of 1941 the hope of gain had induced many merchants to import large stocks of rice, for these proved sufficient to meet the needs of the Settlement and Concession at the reduced consumption rate required by the Japanese authorities during the first five months of the year. Indeed, in this outcome lay some justification for the lack of earlier rigid price controls which might have acted as a deterrent to importers. Stocks of native rice were not taken into consideration since, as has been shown above, the Japanese military had controlled the collection of native rice for the previous two years, using it for their own purposes and allowing virtually none to reach Shanghai.

The methods used in the spring of 1942 for the husbanding of precious stocks of imported rice were: reduction in the number of shops licensed to sell rice, fixing the number of days on which rice could be bought at three each week, limiting the selling hours on these days and reducing the amount of each sale to one *shun* (1.72 pounds) to any one person. There were in consequence long rice

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

queues, and the great urge to obtain rice and fear of being without this staple caused those standing in them to crush closely against the next in line. There were frequent cases of injuries despite the efforts of the police to control the lines. Because of this situation, "rice rustlers" stood in the queues, securing the amount permitted to be bought, which they then sold at more than the official price. It was a relief when the plan for the issue of rice ration tickets finally was approved by the Japanese authorities and was put into effect in July 1942. The distressing rice queues disappeared.

The price of rice rose steadily in the months after the institution of control. The difficulty of getting rice in the queues induced farmers in the nearby countryside to smuggle in native rice which was sold at high prices up to CNC$550 per *shih* of 172 pounds. The Japanese authorities requested the Council to forbid the movement of native rice in the Settlement, as a means, it was claimed, to bring down the price in the provinces. The Japanese authorities had to buy rice there, and, it was argued, the high prices ruling in the city induced higher prices in the provinces. It was contended that Shanghai's future rice supply, when the stocks of imported rice should be finished, must come from the provinces, and it would be to the ultimate advantage of the Settlement population if the purchase could be on reasonable terms. It was known, however, that the native rice must be considerably higher in price than the imported rice when it finally came to be supplied, and therefore at intervals the price of imported rice was raised to ease the ultimate transition to the native rice price, and to build up a fund in the Council's treasury to permit native rice to be sold at a loss if need be. Japanese authorities made available some, but not sufficient, rice from May 1942, when the stocks of imported rice were used up.

The fixing of the saleable quantity and of the price of rice and flour and flour products such as noodles, *ta ping* or big flour cakes, and many other items was only part of the emergency measures undertaken to secure essential commodities. Before Pacific hostilities developed, through an Association of Importers and Manufacturers, the prices of several hundred packaged goods, foods and drugs chiefly, were fixed. Fixing of the prices of coal and coal briquettes followed. Prices for milk were declared. Stocks of tinned milk were requisitioned and kept for children and invalids. It was

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

a matter of regret that control of vegetable oils, so important in the cooking of a Chinese family, could not be exercised by the Council. The Japanese regarded these commodities as materials of war. But stocks found their way uncontrolled into the market. In the case of sugar also, the Council was not permitted by the Japanese authorities to exercise controls.

The cost of living continued to rise despite the efforts of the Council to control the prices of the most significant items as indicated in the preceding paragraphs. The rise was particularly evident when, toward the end of May, Chinese National Currency depreciated day by day till two national currency notes were equal to one Central Reserve Bank note issued by the Nanking Chinese authorities. Prices then naturally rose in terms of Chinese National Currency. When, in June, it was announced by the financial authorities that Central Reserve Bank notes would henceforward be the only legal currency, most shopkeepers merely altered the enhanced National Currency prices unchanged into prices expressed in Central Reserve Bank notes, automatically doubling them. The Council attempted to halt this process by issuing a notification that prices should not exceed those of the last week in May, but with little success. Shopkeepers claimed that replacement costs would exceed the prices of the end of May.

It became apparent therefore that extensive machinery to examine the fair selling prices of a wide range of commodities must be set up. Prices for many food items, including milk, were carefully examined: the selling prices for woollen, silk and cotton cloth of standard grades, and of shoes, were studied: and many other items and services came under close scrutiny.

To enforce selling at official prices, the selling of permitted quantities, to penalise those who refused to sell, who did not display price tags, who moved goods without a permit or without a valid permit, or who did not comply with other emergency regulations, some enforcement machinery had to be set up. For a time after December 8, 1940, the Court, formerly staffed by Chungking-appointed judges, did not function. Later it was taken over by Nanking authorities. But enforcement of emergency requirements could not await the re-opening of the Court, nor, it was felt, could the already overworked Court handle the many cases of infraction of new regulations. Accordingly an enforcement machinery was

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

435 434 633 established within the Council's administration. Those found infringing the regulations were given opportunity to show cause why they should not be penalised and thereafter, if found guilty, were given an option of having their licences withdrawn, their premises closed, or making a money payment. Most chose the last-named course.

The machinery worked well and justly, but was an instrument of enforcement only. If initial policies were not well based, failure to control could not be laid at the door of the enforcement office. The weakness of the whole of the Council's efforts at price control was that in practice the Council could attempt the enforcement of prices at retail only. It had actually obtained an alteration to Bye-law 51 to permit it to control wholesale prices, but in fact control of prices of all commodities in wholesale quantities was in the hands of the Japanese authorities, chiefly the Asia Development Board, the economic organ of the army. Without ability to control wholesale prices, control at retail was ineffective to influence sufficiently the cost of the people's living.

434 633 252 When rationing was instituted, the average ration of rice was 1½ *shun* per person per week. For workers in municipal and public utility enterprises a total ration of 4½ *shun* per week was allowed, and for those in other industrial enterprises, 1½ *shun* per worker in addition to the ordinary civilian ration. The normal civilian consumption of rice was thus cut by about three-fifths, according to figures of consumption obtained in standard of living studies. As a compensation a flour ration considerably larger than the usual flour consumption was given. The people did not, however, take up this large flour ration. Flour is a product which requires the possession of cooking facilities to deal with it. Few simple Chinese households have anything more to cook with than a stove some eight inches in diameter, of earthenware usually, in which an open coal briquette fire can be built. Rice can be boiled on this, but flour cannot easily be cooked on it. Noodles, a flour product bought as such can be boiled on it, but free flour takes a basin and board, and other cooking facilities, before the flour can be used. The Division was able to urge with some success that the rice ration should more nearly comply with the known standards of consumption.

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

dietary-deficiency disease among the 75 workers fed in the kitchen, while many young workers in neighbouring factories acting as the scientific controls, were suffering from disease.

The country habit of storing rice in the husk, and dehusking only that portion which is necessary for the food of the family during the day, no longer holds for city life. Rice is dehusked in the country and transported husked and milled to the city to save transportation costs, and because highly milled rice keeps well. After long storing, however, residual fats present become rancid, and in order to make the rice palatable, it must be washed. First with the milling and later with the washing disappear the essential vitamin contents which prevent dietary-deficiency disease. The experiment was designed to prove that, if rice were stored in the husk, and only milled immediately prior to use, it was unnecessary to wash it, and the vitamin content, therefore, remained to check the onslaught of deficiency disease. No other change from normal food eaten in factories was made in the diet. No additional vegetables or fruits were given. Reliance was placed only on prevention of loss of vitamins in the rice.

The intention had been to make the kitchen the nucleus of a district food service which would apply the results of the study on a wider scale as a demonstration. It was ironic that war should have interrupted the experiment, and that it should not only have become impossible to make any application of the important facts demonstrated in the experiment, but that stocks of Chinese rice, milled or unhusked, should virtually disappear from the Shanghai market, and that the city should have to depend for the ensuing five years on imported rice, all husked, and very high in price.

It might be thought that, with the price of rice soaring out of all bounds, factory owners who supply food to their workers would reduce the quantity of rice supplied, mix it with other cereals, or vary it with beans. But both management and workers have a mistaken idea that, if at all possible, the usual number of bowls of rice must be provided, whatever happens to the "side dishes" of bean curd, vegetables, fish or, rarely, meat. In consequence, expensive imported polished de-vitaminised rice continued to be eaten in former quantities. If the "side dishes" were reduced, as they were in size and variety in order to decrease costs, this last source of nutrients also disappeared. It is small wonder, then, that by 1941, and

3: Hinder G-5 (1933-1942) 1944 AF15 East China AF15

146 164 435 262 744 146

before the even worse situation following Pacific hostilities, signs of deficiency disease were apparent even among workers fortunate enough to have full-time employment in factories.

There is much work for the Shanghai authorities of the future to do in the matter of food. The Public Health Department's long history of supervision of the city's food supply, its war against flies and fly-borne diseases, has represented one phase of the food issue. The Supply Committee's efforts to obtain actual supplies represents a second. Instruction, particularly of employers, in the nutrition aspects of food supplied to workers is a third necessity. The food intake of workers in certain factories where workers are both housed and fed has been analysed in the past and found to be woefully lacking. The attention of certain managements was called to this situation, and some improvement resulted.

The managements of 16 factories where doctors or nurses are employed were induced to keep records of food supplied with a view to seeing how near it came to nutrition standards. In 37 other plants also records were kept. Through these means there should in future be a decrease in dietary-deficiency diseases. Though the provision of food as part of earnings is to be deprecated, it is possible by this means to control for his good the worker's food much more easily than if individual housewives have to be taught what to do. On the other hand, unless the group feeding is right feeding, a whole working force can develop deficiency diseases. In the sense that workers had no option in many cases but to accept the food which the employers provide, it can be said that where deficiency disease resulted therefrom their wage was in fact disease.

THE NECESSITY FOR the education of management, workers, and the public generally in the foods which should be eaten to ensure health and prevent frank deficiency diseases was recognised by the Division. A film was in the making when Pacific hostilities caused suspension of the effort. Two western industrial enterprises and one Chinese had agreed to provide the $10,000 necessary for the film production. A food exhibit had been planned in co-operation with the Chinese Medical Association to take place in the industrial district. It was designed to demonstrate through graphic means the results of wrong feeding. The public would well be able to recognise in pictures the gross deficiency diseases which they